Trend Study 16A-8-02

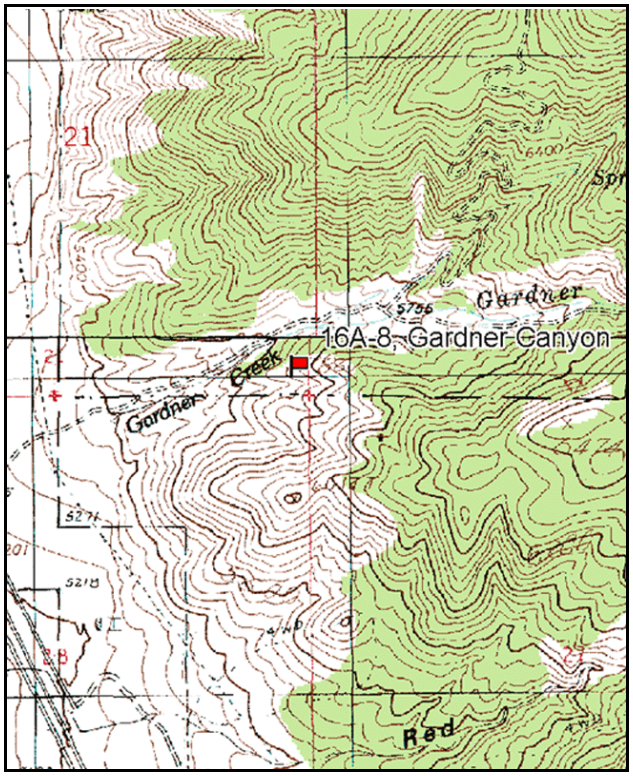
Study site name: Gardner Canyon. Vegetation type: Stansbury Cliffrose.

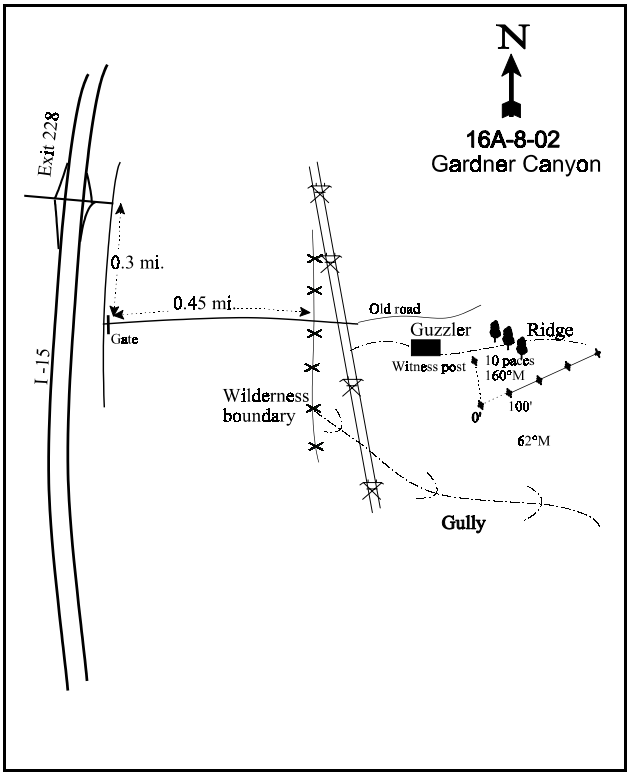
Compass bearing: frequency baseline 62 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From exit #228 off of I-15, turn south on the frontage road and drive 0.3 miles to an intersection with a gate. Turn left at the intersection and drive 0.45 miles to the wilderness boundary fence. Walk up the old road under some powerlines. To the south, and perpendicular to the road, is a steep slope characterized by Gambel oak and cliffrose. Walk up the slope to a guzzler on the ridgetop. The witness post lies 75 yards up the ridge from the guzzler. From the witness post, the 0-foot stake is 10 paces at an azimuth of 160 degrees magnetic. The study is marked by green steel "T" fenceposts 12 to 13 inches in height. The 0-foot stake has a red browse tag, number 3964, attached.





Map Name: Nephi

Diagrammatic Sketch

Township 12S, Range 1E, Section 28

GPS: NAD 27, UTM 12S 4399995 N 429818 E

DISCUSSION

Gardner Canyon - Trend Study No. 16A-8

The Gardner Canyon study is located on critical winter range along the west Nebo face. This narrow band of habitat lying between Interstate 15 and the 6,000 foot elevational contour is critically important. The study is on Division land near the guzzler in Gardner Canyon. The study samples a very steep (45%-50%), west facing slope. The foothills between the site and I-15 are heavily used by deer and elk and many deer carcasses were found in the area during the 1989 reading. Deer and elk pellet groups were moderately abundant in 1997 with similar quadrat frequencies of 21% and 20% respectively. Data from a pellet group transect read along the study site baseline in 2002 estimated 70 deer and 24 elk days use/acre (172 ddu ha and 60 edu/ha).

Soil at the site is exceptionally rocky and well-drained. Parent material is limestone with an abundance of large and small rock on the surface. Effective rooting depth is estimated at only 10 inches. Texture is a loam with a neutral pH of 7.0. Organic matter is limited at only 1.6% and phosphorus, like site #7, is also low at only 4.4 ppm. Values less than 10 ppm may be limiting to plant growth and development. Cover of bare ground is high and some erosion is occurring due to the steepness of the slope. Rock and pavement cover is also abundant. Although erosion is localized and soil pedestalling evident, erosion does not appear to be serious due to the abundant rock and annual grass cover. The erosion condition classification was determined to be slight in 2002.

The dominant browse on the site consist of large Stansbury cliffrose and true mountain mahogany. Cliffrose produced 54% of the browse cover in 1997 and 44% in 2002. Density was moderate at 600 and 500 plants/acre in 1997 and 2002 respectively. The decline in density from 966 plants/acre in 1989 is partly due to the larger sample size used in 1997. Average height of mature plants is currently just under 4 feet, making most plants still available for wildlife use. Use has been consistently heavy since 1983. Approximately 80% of the plants sampled in 1997 and 2002 were heavily hedged. Most plants display normal vigor with percent decadence estimated at 20% in 2002. Annual leader growth averaged 1 ½ inches on cliffrose in 2002.

True mountain mahogany occurs in small numbers with an estimated density of 300 plants/acre in 2002. Mature plants are tall averaging over 5 feet in height. Available portions are heavily hedged but vigor is good. Recruitment is poor and most of the population consists of mature plants. Decadency has remained low since 1983, but increased in 2002 due to drought conditions. Annual leader growth averaged 1.6 inches on mahogany in 2002. Other preferred browse are limited. Undesirable shrubs include narrowleaf low rabbitbrush and broom snakeweed.

Grass and forb composition is dominated by annuals, biennials, and low-value perennials. Cheatgrass produced 60% of the grass cover in 1997 and 52% in 2002. It is still abundant enough to constitute a severe fire hazard to the key browse species, especially cliffrose which do not re-sprout after fire. The only common perennial grass is bluebunch wheatgrass. Perennial forbs are rare with the exception of scarlet globemallow which is fairly abundant. Annual forbs are common but do not produce much cover.

1983 APPARENT TREND ASSESSMENT

Soil condition, as elsewhere on the Nebo face, is a definite limiting factor. The ongoing erosion and competition with the annual herbaceous species makes shrub seedling establishment of desirable plants very difficult. Vegetative condition is poor. The key browse species, Stansbury cliffrose, does not appear to be adequately reproducing, nor are the important secondary shrubs. Broom snakeweed, cheatgrass brome, and annual forbs comprise far too great a proportion of the total vegetative composition. Wildlife use continues to be heavy with little prospect for range improvements in the future.

1989 TREND ASSESSMENT

Differences in the percentages of vegetation and litter cover are largely related to changes in the prevalence of cheatgrass between years. It was much less abundant in the dry season of 1983. The ground cover data shows significantly more pavement and rock cover in 1989, indicating a possible continued loss of surface soil. Soil trend is considered stable, but in poor condition. The density of the key browse species, cliffrose, is unchanged. However, there were some changes in the age class structure of the population. A few young cliffrose were classified in 1989, but 52% of the population was considered decadent compared to 21% in 1983. The majority of the cliffrose remain severely hedged and generally vigor is only fair. The true mountain mahogany are also heavily hedged. Most of the junipers on the site have an obvious high-line. The few sagebrush sampled are decadent and in poor vigor. The drop in total browse density is due mainly to a decline of broom snakeweed. Browse trend is considered down slightly. There is a low frequency of perennial grasses and forbs. The only perennial grass species encountered in 1989 was bluebunch wheatgrass. The only perennial forbs with any significance are scarlet globemallow and low fleabane. Fewer species were identified in 1989. Trend for the herbaceous understory is stable, but in poor condition.

TREND ASSESSMENT
soil - stable and continued poor condition (3)
browse - down slightly (2)
herbaceous understory - stable, but in poor condition (3)

1997 TREND ASSESSMENT

Soil conditions are still poor on the site, however, protective ground cover has increased since 1989. Trend is considered slightly up for soils. Trend for the key browse species, cliffrose and mahogany, is stable. Cliffrose is heavily hedged, although vigor has improved and percent decadency has declined from 52% in 1989 to 23%. Mahogany is also heavily utilized, but vigor is normal and decadency low at only 8%. Trend for the herbaceous understory is stable yet depleted because of the large proportion of annual weeds in the understory. The understory of annuals is a severe fire hazard to the non-sprouting browse species.

TREND ASSESSMENT
soil - slightly up (4)
browse - stable (3)
herbaceous understory - stable, but depleted (3)

2002 TREND ASSESSMENT

Soil trend is down slightly since 1997. Percent bare ground has increased and the ratio of protective ground cover to bare ground has declined. There is some erosion occurring but it is not severe and the erosion condition classification was determined as slight in 2002. Trend for the key browse species, Stansbury cliffrose and true mountain mahogany are stable. Cliffrose is heavily utilized but vigor remains good and percent decadence is stable at 20%. Recruitment remains poor. Annual leader growth is also poor averaging only about 1 ½ inches. Mahogany density is stable but like cliffrose, recruitment is poor with no seedlings or young sampled in 2002. Use is also heavy on available plants but vigor is good. The number of decadent plants has increased from 8% to 33%. Annual leader growth is poor averaging only 1.6 inches. Trend for the herbaceous understory is down slightly due to a significant decline in the nested frequency of bluebunch wheatgrass which provides most of the perennial grass cover. Perennial forbs are uncommon except for scarlet globemallow which is moderately abundant. Nested frequency of cheatgrass declined significantly but it is still abundant and provides a majority of the total grass cover.

TREND ASSESSMENT
soil - slightly down (2)
browse - stable (3)
herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 16A, Study no: 8

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	$_{ab}$234	$_{b}$231	$_{b}$227	$_{a}$187	93	85	80	79	7.66	7.83
G	Bromus tectorum (a)	-	-	$_{b}$344	$_{a}$296	-	-	99	91	11.33	9.32
G	Festuca myuros (a)	-	-	3	6	-	-	1	2	.00	.18
G	Poa bulbosa	-	-	1	5	-	-	1	3	.00	.64
G	Poa pratensis	2	-	-	-	1	-	-	-	-	-
G	Poa secunda	1	-	-	6	1	-	-	3	-	.04
Total for Annual Grasses		0	0	347	302	0	0	100	93	11.34	9.50
Total for Perennial Grasses		237	231	228	198	95	85	81	85	7.67	8.51
Total for Grasses		237	231	575	500	95	85	181	178	19.01	18.02
F	Alyssum alyssoides (a)	-	-	$_{b}$350	$_{a}$303	-	-	98	96	5.48	1.82
F	Asclepias spp.	-	-	-	-	-	-	-	-	-	.03
F	Astragalus spp.	-	2	-	-	-	1	-	-	-	-
F	Calochortus nuttallii	3	-	6	-	2	-	3	-	.01	-
F	Cirsium spp.	1	-	-	-	1	-	-	-	-	-
F	Comandra pallida	3	-	-	-	1	-	-	-	-	-
F	Descurainia pinnata (a)	-	-	6	-	-	-	3	-	.01	-
F	Eriogonum brevicaule	3	-	-	-	1	-	-	-	-	-
F	Erodium cicutarium (a)	-	-	$_{a}$12	$_{b}$86	-	-	5	32	.05	1.31
F	Erigeron pumilus	$_{b}$14	$_{b}$21	$_{a}$-	$_{a}$-	5	9	-	-	-	-
F	Galium aparine (a)	-	-	2	-	-	-	1	-	.03	-
F	Hackelia patens	-	-	4	-	-	-	1	-	.00	-
F	Helianthus annuus (a)	-	-	-	3	-	-	-	2	-	.01
F	Hedysarum boreale	$_{b}$17	$_{a}$-	$_{a}$-	$_{a}$-	9	-	-	-	-	-
F	Lappula occidentalis (a)	-	-	$_{a}$-	$_{b}$16	-	-	-	7	-	.18
F	Leucelene ericoides	$_{a}$-	$_{a}$-	$_{b}$15	$_{ab}$8	-	-	6	3	.27	.21
F	Lygodesmia grandiflora	12	3	5	16	5	1	2	7	.03	.14
F	Sphaeralcea coccinea	$_{ab}$90	$_{b}$117	$_{ab}$80	$_{a}$80	38	47	35	36	.50	1.77
F	Streptanthus cordatus	8	3	7	-	3	2	3	-	.04	-
F	Tragopogon dubius	4	-	4	-	2	-	2	-	.01	-
F	Trifolium spp.	-	-	1	-	-	-	1	-	.00	-
Total for Annual Forbs		0	0	370	408	0	0	107	137	5.57	3.32
Total for Perennial Forbs		155	146	122	104	67	60	53	46	0.88	2.16
Total for Forbs		155	146	492	512	67	60	160	183	6.46	5.48

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 16A, Study no: 8

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Artemisia tridentata vaseyana	1	0	-	-
B	Cercocarpus montanus	11	13	2.78	3.31
B	Chrysothamnus nauseosus albicaulis	1	1	.38	.30
B	Chrysothamnus viscidiflorus stenophyllus	15	13	.21	.46
B	Cowania mexicana stansburiana	22	21	4.65	5.33
B	Gutierrezia sarothrae	26	45	.50	2.07
B	Rhus trilobata	0	0	-	.76
Total for Browse		76	93	8.54	12.25

Key Browse Annual Leader Growth
Herd unit 16A , Study no: 8

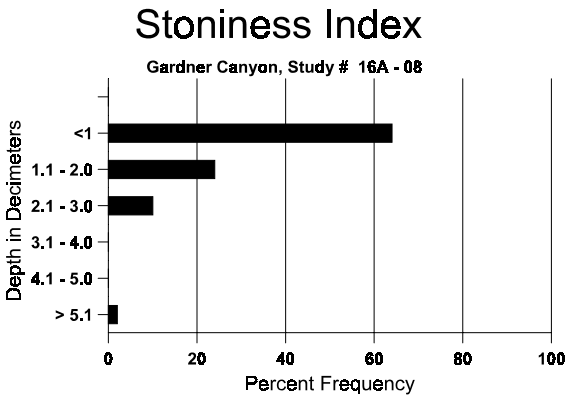
Species	Average leader growth (in) '02
Cercocarpus montanus	1.6
Cowania mexicana stansburiana	1.5

BASIC COVER --
Herd unit 16A, Study no: 8

Cover Type	Nested Frequency '97	Nested Frequency '02	Average Cover % '83	Average Cover % '89	Average Cover % '97	Average Cover % '02
Vegetation	380	346	0	10.25	33.54	33.40
Rock	317	327	17.00	20.00	18.29	18.00
Pavement	303	320	2.00	12.75	7.86	5.28
Litter	385	365	50.50	31.00	30.88	30.60
Cryptogams	44	35	.25	0	.99	.75
Bare Ground	274	337	30.25	26.00	17.82	26.45

SOIL ANALYSIS DATA --
Herd Unit 16A, Study no: 08, Gardner Canyon

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
10.1	55.4 (13.8)	7.0	38.7	40.7	20.6	1.6	4.4	57.6	.5



PELLET GROUP FREQUENCY --
Herd unit 16A, Study no: 8

Type	Quadrat Frequency		Pellet Transect	
	'97	'02	Pellet Groups per Acre '02	Days Use per Acre (ha) '02
Rabbit	5	2	-	-
Elk	20	20	313	24 (60)
Deer	21	26	905	70 (172)

BROWSE CHARACTERISTICS --
Herd unit 16A, Study no: 8

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	37	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	%Change
	'83	0		-
	'89	0		-
	'97	0		-
	'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
M	83	-	1	1	-	-	-	-	-	-	2	-	-	-	66	25	19	2
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	21	35	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	22	37	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	1	1	-	-	-	-	-	-	1	-	-	1	66			2
	97	-	2	-	-	-	-	-	-	-	-	-	-	2	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	50%	50%	00%	+ 0%
'89	50%	50%	50%	-39%
'97	100%	00%	100%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	66	Dec:	0%
'89	66		100%
'97	40		100%
'02	0		0%

Cercocarpus montanus																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	2	1	-	-	-	-	-	-	3	-	-	-	100			3
	97	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	7	3	-	-	-	-	-	-	10	-	-	-	333	52	55	10
	89	-	3	7	-	-	1	-	-	-	11	-	-	-	366	62	51	11
	97	-	2	6	-	1	1	-	-	-	10	-	-	-	200	63	79	10
	02	1	4	1	-	-	4	-	-	-	7	3	-	-	200	67	75	10
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	5	-	-	-	4	-	-	1	100			5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	70%	30%	00%	+29%
'89	36%	64%	00%	-48%
'97	25%	75%	00%	+20%
'02	27%	67%	07%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	333	Dec:	0%
'89	466		0%
'97	240		8%
'02	300		33%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus albicaulis																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	1	-	-	-	-	-	-	-	1	-	-	-	20	28	71	1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	25	51	0
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	-	1	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	100%	00%	00%	+ 0%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		0%
'89	0			0%
'97	20			0%
'02	20			100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus stenophyllus																		
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	266			8
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	18	-	-	-	-	-	-	-	-	18	-	-	-	600	10	13	18
	89	7	6	-	1	-	-	-	-	-	13	-	-	1	466	10	14	14
	97	20	-	-	-	-	-	-	-	-	20	-	-	-	400	13	25	20
	02	13	1	-	-	-	-	-	-	-	14	-	-	-	280	14	25	14
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	1	-	-	-	-	-	-	-	1	-	-	1	66			2
	97	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2
	02	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+21%
'89	29%	00%	08%	-45%
'97	00%	00%	05%	-18%
'02	06%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	633	Dec:	0%
'89	798		8%
'97	440		9%
'02	360		22%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cowania mexicana stansburiana																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	3	-	-	2	2	-	-	-	7	-	-	-	233			7
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	1	-	-	-	-	-	-	1	-	-	-	20			1
M	83	-	11	12	-	-	-	-	-	-	23	-	-	-	766	32	30	23
	89	-	2	5	-	-	-	-	-	-	7	-	-	-	233	25	29	7
	97	1	1	15	-	-	3	-	-	-	20	-	-	-	400	46	48	20
	02	-	-	8	-	-	6	-	5	-	19	-	-	-	380	38	43	19
D	83	-	-	6	-	-	-	-	-	-	6	-	-	-	200			6
	89	-	2	13	-	-	-	-	-	-	8	-	-	7	500			15
	97	-	-	4	-	-	2	1	-	-	5	-	-	2	140			7
	02	-	-	2	-	-	3	-	-	-	3	-	-	2	100			5
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	180			9
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	120			6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	38%	62%	00%	+ 0%
'89	31%	69%	24%	-38%
'97	03%	80%	07%	-17%
'02	00%	80%	08%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	966	Dec:		21%
'89	966			52%
'97	600			23%
'02	500			20%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	29	-	-	-	-	-	-	-	-	29	-	-	-	580			29
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	83	58	-	-	-	-	-	-	-	-	58	-	-	-	1933	11	9	58
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	266	9	8	8
	97	33	-	-	-	-	-	-	-	-	33	-	-	-	660	7	10	33
	02	96	-	-	-	-	-	-	-	-	96	-	-	-	1920	7	12	96
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	16	-	-	-	-	-	-	-	-	8	-	1	7	533			16
	97	2	-	-	-	-	-	-	-	-	1	-	-	1	40			2
	02	17	-	-	-	-	-	-	-	-	11	-	-	6	340			17
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	300			15

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-57%
'89	00%	00%	32%	+35%
'97	00%	00%	02%	+44%
'02	00%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	1933	Dec:	0%
	'89	832		64%
	'97	1280		3%
	'02	2280		15%

Quercus gambelii

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	78	81	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	36	26	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Rhus trilobata																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	57	188	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	0		-